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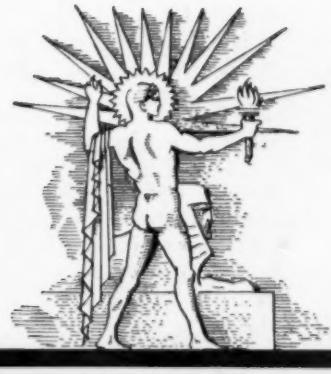
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



May 3, 1941

Useful Web

See Page 281

A SCIENCE SERVICE PUBLICATION

Do You Know?

Chromium-nickel stainless steel is *non-magnetic.*

Stronger *pewterware* can be made from new alloys, it is reported.

A *queen ant* may live to the old age of 15 years, says an entomologist who knows of such a case.

Papier-mache, known to the ancient Chinese, was probably the first *plastic,* a chemist points out.

A cow will *graze* only about eight hours in 24, regardless of how good the pasture is, Cornell University scientists have found.

Having stored its valuable *antiquities,* the British Museum is "carrying on" by exhibiting some duplicates and models of little value.

Cotton coats to keep older sheep warm in chill weather are used experimentally and may help the sheep to produce more and better wool.

Sheets of "tempered" *nylon* have possibilities for use in currency, aircraft windshields, film for safety glass, window shades, and other uses.

More than 62,000 spearmint, sweet basil and other *herb plants* were distributed to New Hampshire farmers last year in a cooperative project of the University of New Hampshire and the WPA, to test the state's ability to grow for the market herbs no longer available from Europe.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

ARCHAEOLOGY

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PSYCHIATRY

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PSYCHOLOGY

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PUBLIC HEALTH

What serious disease has now been found to affect chickens and pigeons? p. 286.

ZOOLOGY

Do you believe in the okapi and the duck-billed platypus? p. 280.

Scientists calculate that there is about one-third as much *water* in the earth as in all the oceans.

High grade *tungsten* ore, strategic for hardening steel in defense industries, has been discovered in Idaho.

Water cannot percolate deeper into the earth than six miles, because of tremendous pressure and tight packing at great depths, it is believed.

Most desert snakes and lizards go into underground *hibernation* in winter in shallow retreats.

Vegetable oils to substitute for mineral oils as *lubricants* in internal combustion engines are being tested in India.

Stammering is so unusual in women that male stammerers, according to estimates, outnumber female at least 19 to 1, and possibly 20 to 1.

SCIENCE NEWS LETTER

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GENERAL SCIENCE

Earth Is in Suburbs, Not the Downtown Section, of Galaxy

Reports from Many Fields Are Presented to National Academy of Sciences at the Annual Spring Meeting

THE SUN, together with the earth and other members of the solar system, is in the suburbs of our vast celestial city, or galaxy—not part way down town, as astronomers have supposed.

Observations which seem to remove us from a more central location were announced by Dr. Arthur B. Wyse and Dr. Nicholas U. Mayall, of the Lick Observatory of the University of California. Their data were presented to the National Academy of Sciences meeting in Washington.

All the stars that can be observed, even with most telescopes, and the sun as well, are members of the galaxy, a swarm of stars in the shape of a huge disk. Looking in the plane of the disk, we see many more stars than when we look to the sides. So concentrated are they in the disk's plane that the naked eye cannot detect them individually, and the effect is the Milky Way.

Outside this galaxy are millions of other galaxies, formerly called spiral nebulae. Only one of these, in the constellation of Andromeda, directly overhead on autumn evenings, is visible, as a faint patch of light, without a telescope. This is Messier 31, its number in the catalog of nebulae prepared in 1781 by Charles Messier, a French astronomer. Drs. Wyse and Mayall have studied this galaxy, as well as Messier 33, which is in the same part of the sky, in the constellation of Triangulum.

Up to now, it has been assumed that there was a great concentration of the mass of these galaxies toward their centers. Consequently, the stars in each system, revolving around the center in merry-go-round fashion, would be subject to the same sort of motion as in the solar system. In the latter case, the sun contains most of the mass, and the innermost planet, Mercury, travels fastest. Farther out, speeds are progressively slower, because these planets are not pulled as much by the sun's gravitation. Mercury, for example, moves around the sun at about 30 miles per second, the earth at 18.5 miles per second, Jupiter at 8 miles per second, and Pluto, most distant, only 3 miles per second.

Using the spectroscope to analyze the light of the two galaxies, and to measure the speed of various sections, the California astronomers find that a short distance from the center of Messier 31 the speed is not fastest, but slowest. "The velocities in both cases," they report, "increase outwards to unexpectedly large distances from the center." This is similar to movement of parts of a solid wheel, rather than a group of separate stars. By a mathematical study, they found a distribution of the stars in such a system that would account for this.

"The results for both spirals," they announced, "indicate only a very slight tendency for the mass to be concentrated toward the center."

Then they checked over measurements of the rotation of stars in our galaxy, and found that these did not necessarily indicate a high concentration of the galactic mass to the center, which is in the direction of the constellation of Sagittarius.

"Comparison of the densities and the rotational velocities in the two spirals with those in the solar neighborhood, suggests that the sun may be situated in the outermost parts of the galaxy, well beyond the main body of the system," they declared.

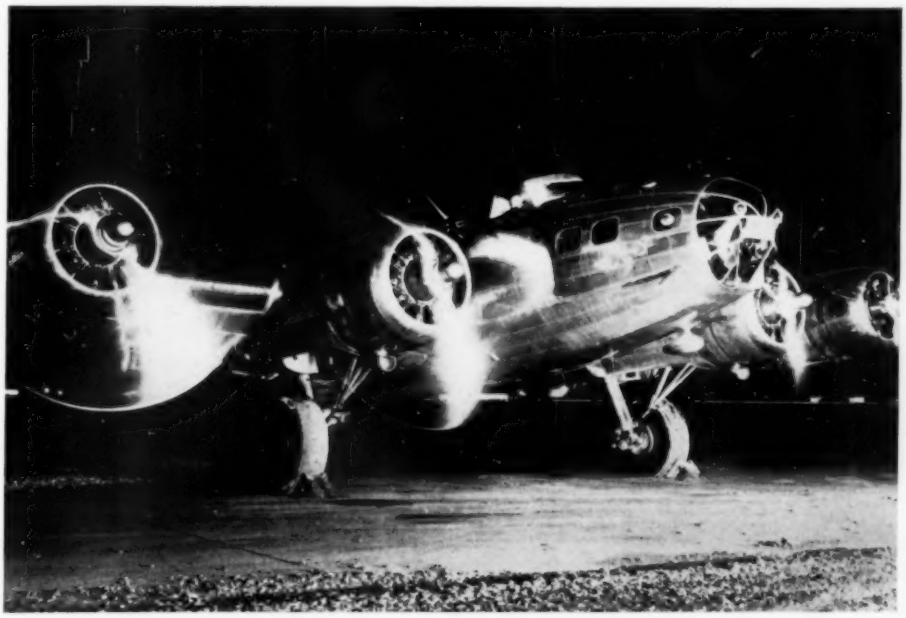
Many observations have indicated that the stars that are nearer the center of the galaxy are going faster than the sun, and those farther out are going more slowly. But if we are in the galactic suburbs, it may be that we are so far out from the center that there is a falling off of speed.

Science News Letter, May 3, 1941

Spirals "Trail Their Arms"

FIRST unambiguous determination of the direction in which one of these spiral galaxies rotates was announced by Dr. Edwin P. Hubble, of the Mt. Wilson Observatory, in paper prepared jointly with Dr. Mayall. Since it cannot always be determined which edge of the disk is nearer, spectroscopic measures, while they reveal speeds, do not necessarily show the direction.

Of 1000 of the brightest galaxies in the northern sky, only one, NCG 3190, in the constellation of Leo, permits both a spectroscopic measure of the movement along the spiral arms, and a definite



NIGHT FLIGHT

In the glare of floodlights is visible the 4-engine Flying Fortress built by Boeing in Seattle for the U. S. Army Air Corps and Britain's R. A. F.

indication of the way it is tilted. This object, it was announced, "trails its arms as it rotates." In five others, though it is not so certain, the same condition seems to prevail, so they conclude that "all spirals trail their arms as they rotate."

Science News Letter, May 3, 1941

Produces Seedless Tomatoes

PRODUCTION of seedless tomatoes from unpollinated flowers, and even from unopened buds, by spraying with solutions of a growth-promoting substance was described before the Academy meeting by Dr. P. W. Zimmerman of the Boyce Thompson Institute for Plant Research. The substance is an organic compound known as beta naphthoxyacetic acid, which the speaker stated has several advantages for practical production of seedless tomatoes and possibly of other fruits.

The flowers were sprayed just after opening, or in some cases as well-developed buds. In the latter, the fruits sometimes began to enlarge before the flowers opened, bursting out through the sides of the corollas. Petals, stamens and pistils of sprayed flowers persisted for an abnormally long time. In some cases both petals and stamens remained in good condition for 30 days, while flowers left unsprayed withered within three days after opening.

The naphthoxyacetic acid and its derivatives caused erratic behavior in other plants. Tobacco stalks sprayed at the tip grew taller and flowered earlier than unsprayed control plants. Compound leaves were either reduced partly or altogether to simple leaves, or stimulated to develop into double-compound forms. When spray treatments were suspended, however, treated plants again grew normally, producing leaves and flowers of their customary types.

Science News Letter, May 3, 1941

Draper Medal to Wood

DR. Robert Williams Wood, professor emeritus of experimental physics at the Johns Hopkins University, Baltimore, was awarded the Henry Draper Gold Medal of the National Academy of Sciences. It was conferred by Dr. Frank B. Jewett, president of the Academy.

The medal, awarded 25 times since it was established in 1883, is given for important original investigations in astronomical physics. Dr. Otto Struve, director of the Yerkes Observatory and a member of the committee which recommended the medal for Dr. Wood, said that three of his researches, among many others, stand out particularly. These are his pioneer work in resonance spectra, his use of color screens in astronomical photography and the advances he has made in the preparation of diffraction gratings, which take the place of prisms in analyzing light, from sun or stars, into spectra.

Science News Letter, May 3, 1941

X-Ray Danger Postponed

X-RAY workers whose reproductive cells are exposed to heavy doses of powerful radiations need not fear that their immediate offspring will be deformed or defective as a consequence. Nevertheless, there is a chance that such deleterious mutations may crop up among their descendants centuries later, after as many as a hundred generations.

These are possible practical implications of a statistical study on X-rays and human gene mutations reported by Prof. H. J. Muller, of the University of Edinburgh and Amherst College. Despite the remoteness of possible ill consequences of X-ray exposure, Prof. Muller recommended that laboratory workers with the dangerous radiations shield themselves behind lead plates wherever practicable.

Gene mutations caused by X-rays or other powerful radiations are usually undesirable from the human point of view. Fortunately, however, they usually are also recessives, that is, two of the same kind have to be mated in order to produce the ill effect.

There are two ways in which genes made defective by X-rays can cause trouble. One is by the encounter of an X-ray mutation with a similar gene already existing in the general population. Prof. Muller calculated the chance of this occurrence as possible once in 30, or more likely 100 or more generations—that is, some 750 to 3,000 years of human history.

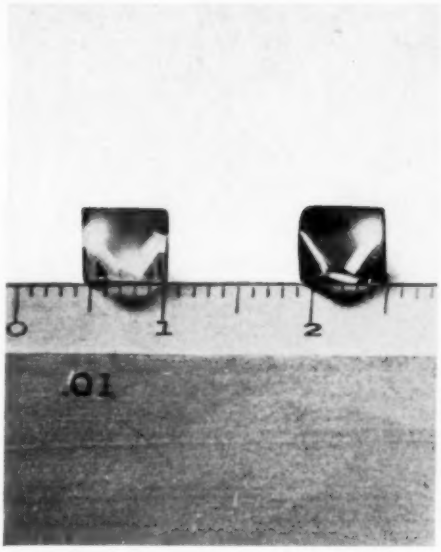
The second possible way for two such genes to encounter is through the mating of relatives descended from the original victim of the rays. Even with the closest kind of human inbreeding, this would not be likely to happen more than once in 200 generations—about 5,000 years.

However, Prof. Muller cautioned, the likelihood of a defective gene being "bred out," once it is established, is exceedingly remote. Hence the desirability of protection for persons habitually exposed to heavy X-ray doses.

Science News Letter, May 3, 1941

EXAMINATION

Prof. Harry Berman examines one of his cyclotron-green diamonds under the binocular microscope. Its white "twin" is on the dark plate.



COMPARISON

A white diamond, and one that has been made green with the cyclotron, shown against a centimeter scale. One centimeter equals .39 inches.

PHYSICS

Atom-Smasher Turns White Diamond to Green Variety

SCIENCE is using one of its favorite atom-smashers, the cyclotron, in a new role—to make those highly-prized gems, beautiful green diamonds.

The technique is simple: put an ordinary white diamond in a cyclotron and bombard it with high-speed atomic particles for an hour and—presto—it becomes a gorgeous dark green gem. Studies show such cyclotron-treated diamonds to be virtually identical with naturally occurring green diamonds which are given their tint by long-term exposure to radioactive substances. The cyclotron bombardment, because it is considerably more intensive than that from radioactive substances, simply acts to speed up the process.

Prof. Harry Berman, curator of the Harvard Mineralogical Museum, who announced the new method of making these highly-prized gems after a series of experiments with Harvard's cyclotron, said the research might also throw some light on the little-understood problem of the effects of atomic bombardment, as well as that of crystal coloration.

The major difference between cyclotron-green diamonds and radium-green diamonds, Prof. Berman has found, is that the latter lose their color upon heating for half an hour at 650 degrees, Centigrade, whereas the cyclotron-green diamonds, even when heated for lengthy periods, merely turn a deep yellowish-brown which shows no sign of dissipating.

He believes this to be further proof that while the effects of the cyclotron are very similar to those of natural radioactivity, they are far more intensive.

Science News Letter, May 3, 1941

PSYCHOLOGY

Intelligence Can't Be Isolated As Chemical Elements Can

Only a Probability That Person Possessing It Will Act in Certain Way; Must Be Related To Study of Brain

INTELLIGENCE is only a probability that the person possessing it will act in a certain way under certain conditions. It is not an inner essence or a faculty or power that can be isolated and measured as the chemist can measure the elements.

This modern view of mental abilities was expressed before the American Philosophical Society by the eminent educational psychologist, Dr. Edward L. Thorndike, of Teachers College, Columbia University.

"Three or four hours testing of a person with suitable intelligence tests or meters," Dr. Thorndike said, "gives a score which is highly indicative of how well he will do in school, how likely he is to escape confinement in an institution for the feeble-minded, and how well he will understand the sermons he hears, the policies for which he votes, and the like. It is usefully indicative of his fitness to make wise decisions as a parent, neighbor, and citizen.

"Such a score obtained at age eight to eighteen is equal or superior in value to a careful physical examination at that age by an expert physician."

Psychologists would like to be able to isolate each individual mental ability, as the chemist does his elements, and measure all of it and nothing but it. But, unfortunately for science and perhaps fortunately for man, mental abilities do not occur in pure form in any person. Each score that the psychologist can obtain from his measures is contaminated by the influence of other abilities —it is a mixture.

By the mathematical procedures known as factor analysis, components or factors have been isolated that would be pure if we could get measurements of them in real people, but psychologists vary widely in their opinion of the result, Dr. Thorndike said.

"Some expect," he said, "that the factors discovered will inaugurate great advances in knowledge about, and control of, human abilities. Some think that these factors are unrealizable abstractions, like an animal defined as 40% man, 30% turtle, 20% shark and 10% earthworm."

Psychology will not be satisfied, Dr. Thorndike declared, until it succeeds in relating mental abilities to their causes, bases, parallels or counterparts in the brain and nervous system.

Not much is known along this line at present, although some former errors have been eliminated.

"We now know," Dr. Thorndike explained, "that a brain is not much like a system of factories and storehouses interconnected by railroad tracks.

"It is more like a telephone and telegraph system with the added feature of more or less permanent modification by all the connections made and messages sent. It may include an elaborate system of resonators. What corresponds to an ability is more like a system of connections and modifications involving all army or navy activities, than like a regiment of cell-bodies. The cell-bodies indeed may only nourish and care for the conducting parts of the neurones. What the pattern of the neurones' actions is may often be more important than which particular neurones they are."

Science News Letter, May 3, 1941

Nazis Have Taken Lead

THE LEAD in military psychology has passed from America to the Nazis, Dr. Robert M. Yerkes, of Yale University, warned the American Philosophical Society.

In the World War, American psychologists pioneered by making their methods serve the Army and the Navy, Dr. Yerkes said.

Dr. Yerkes is himself distinguished for the services he rendered the nation at that time, particularly in development of the psychological testing and classification system which has been used successfully in industry ever since.

But after the war, Dr. Yerkes said, America neglected the field of psychology applied to the service of the state, while Germany took the initiative and leadership. Research and training centers were established in Germany and hundreds of men were trained for psychological service to the state.

Now the Nazis have an unparalleled organization to deal with problems of propaganda, morale, personnel and like matters of human engineering. The United States has no comparable organization, few military psychologists, and no training schools in Army or Navy to meet prospective needs, he said.

Psychology has other than military values for defense, Dr. Yerkes declared.

"In the interest of social progress it would seem incomparably more important," he said, "to improve human nature and increase the ability and usefulness of the individual, than, in accordance with our current concentration of effort, to prolong life into senility."

Dr. Yerkes urged the establishment of professional schools of psychology, similar in principle to those of medicine and engineering, with courses leading to the degree of Doctor of Psychology. For those who wish to practice their profession, licensing under federal and state laws should be provided.

Science News Letter, May 3, 1941

PHYSICS

Cosmic Rays Seem to Consist Mostly of Heavy Protons

Measurements in Airplanes Far Above Earth Show Particles Can Penetrate Seven Inches of Lead

THE COSMIC rays that continually bombard the earth from outer space seem to be mostly of protons, the heavy parts of atoms, rather than electrons. New evidence in favor of this theory is contained in experiments reported by Dr. Arthur H. Compton, University of Chicago's Nobel prizeman in physics, to the American Philosophical Society.

He told of various measurements made of the cosmic rays far above the surface of the earth, from airplanes and balloons. Some of these measured the number of particles that came in which were capable of penetrating thick blocks of lead. It was found that most of the particles which could get through an inch and a half of the metal were able to traverse some seven inches.

Many electrons are stopped by the magnetic field of the earth. Those with enough energy to penetrate this field, and so to reach the lead blocks, should be stopped by only four inches of lead, explained Dr. Compton. On the other hand, he said, the observations fit in with the idea that protons, with positive electrical charges, are the primary cosmic rays. When these strike the nuclei of atoms in the air, they produce mesotrons, which constitute an important part of the cosmic radiation observed on the earth's surface.

He also reported observations by V. C. Wilson, W. P. Jesse, M. Schein and E. O. Wollan, using detector tubes carried aloft in airplanes and balloons. These showed that an inappreciable number of mesotrons are produced below 3¾ miles altitude. At about 5 miles the production becomes strong, and increases up to at least 12½ miles.

"At the highest altitude, where the barometer is 2 centimeters of mercury," he said, "the number of mesotrons is at least as great as the number of incoming cosmic ray particles as estimated by Millikan and his collaborators."

Another experiment described, made by G. Herzog and W. Bostick, made use of a cloud chamber between the poles of a powerful magnet. The chamber shows, by a fine line of water droplets, the passage of one of the various particles. With it, said Dr. Compton, there were found many slow mesotrons, which are exceedingly rare at ground level. The production of positive and negative pairs of slow electrons was also noticed.

Science News Letter, May 3, 1941

Diphtheria Antitoxin

PRODUCTION of diphtheria antitoxin in crystalline form was announced before the meeting by Dr. John H. Northrop of the Rockefeller Institute for Medical Research laboratories at Princeton, N. J.

First step was the formation of a precipitate, by mixing diphtheria toxin with serum from a horse which had been immunized against the toxin. This precipitate, said Dr. Northrop, is a mixture of toxin and antitoxin. The toxin was digested away with trypsin, one of the digestive enzymes, leaving the antitoxin in solution. Further treated with ammonium sulfate, the solution yielded a more highly purified, unstable, crystalline protein in the form of small plates. This protein has anti-toxic properties, which remained unchanged after three recrystallizations.

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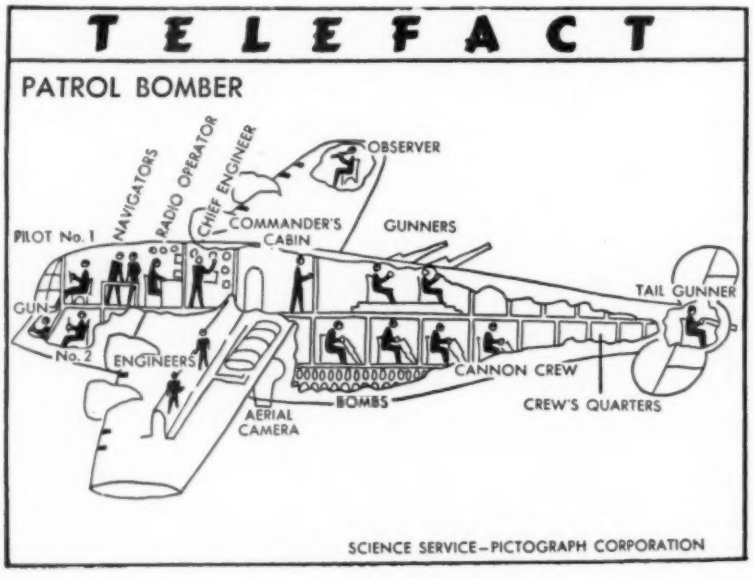

PHYSICS

Earth Used As Instrument To Study Cosmic Rays

Observations Made in India Near Magnetic Equator And Compared With Other Studies Farther North

USING the earth itself as a scientific instrument to analyze the mysterious cosmic rays, new evidence has been found that they originate between the stars when atoms of common elements are annihilated and turned into pairs of electrons.

This achievement was announced by Dr. Robert A. Millikan, head of the California Institute of Technology, in an address before the National Academy of Sciences. His researches were performed in collaboration with Dr. H. Victor Neher and Dr. William H. Pickering.

Cosmic rays entering the earth's atmosphere from outer space are made up to the extent of more than 60 per cent "of electronic bullets, each of energy between 2 billion electron volts and 15 billion electron volts," said Dr. Millikan. The action of these on the nuclei of atoms in the atmosphere produces other particles, mesotrons, which carry the energy farther than all the electrons themselves could penetrate.

To explain the origin of the incoming high-energy electrons, Dr. Millikan has adopted the hypothesis that they result from the total conversion of atoms of helium, carbon, nitrogen, oxygen and silicon. In support of this he cited the discovery, in the Institute's Kellogg Radiation Laboratory, by Dr. C. C. Lauritsen and Dr. William A. Fowler that a part at least of the energy which an atom has at rest is capable of transforming itself into a pair of electrons, one with a positive charge, the other negative. He also cited two discoveries by another of his colleagues, Dr. I. S. Bowen, "first, that atoms, when out in interstellar space, are able to undergo atomic transformations forbidden to them within the stars, and, second, that in ring-nebulae, trillions of miles away from the exciting star and therefore presumably reflecting conditions in interstellar space, there are five of the atoms, namely helium, carbon, nitrogen, oxygen and silicon, each of which is more than ten times more abundant than any other atom save hydrogen." The latter, he stated, has such a small rest-mass energy that it must be excluded from producing cosmic ray effects.

"The hypothesis made in view of these discoveries," he declared, "is that, while the evolution of energy by the stars is maintained, as Bethe has recently shown, by the partial transformation, within the stars of the rest-mass energy of hydrogen into radiant energy through the building of helium, carbon and other atoms out of hydrogen, and the release through this process of the so-called 'packing-fraction' energy, the energy of cosmic rays, on the other hand, is maintained, by the occasional complete transformation in interstellar space of the rest-mass energy of the atoms of helium, carbon, nitrogen, oxygen, and silicon (and even heavier aggregates), into cosmic rays, each such event presumably creating an electron pair, though an occasional photon pair, or neutron pair, or even proton pair for sufficiently high energies, need not necessarily be excluded."

Each of the five kinds of atoms should produce rays with definite amounts of energy. Those from the transformation of helium atoms would possess 1.9 billion electron volts (abbreviated b. e. v.), those from carbon 5.6 b. e. v., from nitrogen 6.6 b. e. v., from oxygen 7.5 b. e. v. and from silicon 13.2 b. e. v.

The magnetic field which surrounds the earth shields certain regions from these rays. Near the magnetic equator they have to travel across the lines of magnetic force, and only those of highest energy can penetrate. It has been estimated that a ray coming in vertically at the magnetic equator would have to have an energy of at least 18 b. e. v. Farther north, or south, they can spiral inwards along the lines of force, and less energy is required to bring them to the ground.

Thus, near the magnetic equator, only a very few vertical rays, due perhaps to elements other than the five mentioned, can come in. But north of latitude 20 degrees (measured from the magnetic equator and not the geographical one) the silicon rays may penetrate. Hence, as one travels northwards with detecting instruments, there should be a sudden increase in the rays at 20 degrees latitude. No further increase should come until far enough north to encounter rays from oxygen, nitrogen and carbon, whose energies are roughly the same. Then there should be another "plateau," the next increase coming when the low-energy helium rays are reached. From this position, that of Bismarck, N. D., there would be no more increase to the pole.

To test this, observations were made in India, near the magnetic equator, with the cooperation of the British Indian Meteorological Service, and supported by the Carnegie Corporation of New York and the Carnegie Institution of Washington. These were compared with other studies made farther north. Evidence designated by Dr. Millikan as "excellent" was found for the existence of the different bands of energy in the cosmic rays. He also found good evidence for the four plateaus of constant cosmic ray intensity in the different latitudes. More experiments, in the United States and Mexico, are planned for the coming summer, he announced.

Science News Letter, May 3, 1941

METEOROLOGY

Stratosphere Conditions Duplicated in Laboratory

STRATOSPHERE conditions of low atmospheric pressure and great cold are duplicated in a three-foot-square cabinet known as a "flight similitude chamber," developed by a University of Chicago meteorologist, Dr. Michael Ference, Jr.

The apparatus will be used in training weather observers for service in military and civil aviation, as well as in calibrating the radiosonde instruments carried up into the stratosphere by small balloons to record conditions there and report them back to earth by means of robot radio sets.

In the laboratory, the radiosonde instruments are placed in the flight similitude chamber. A vacuum pump partially exhausts the air, while a combination of dry ice and alcohol evaporation reduces the temperature. The radiosonde faithfully reports the changing conditions to the listening students, while an instructor checks accuracy of their interpretations.

Conditions duplicating those of 20 miles above the earth's surface, with atmospheric pressure reduced to one per cent of normal and temperature at 100 degrees below zero Fahrenheit, have been produced in the laboratory with the new apparatus.

Science News Letter, May 3, 1941

PSYCHIATRY

War News and Hysteria Frighten U. S. Children

AMERICAN children are showing more fright and worry over war than British children who have stood war's actual dangers, Dr. Harvie D. Coghill of the Medical College of Virginia told the American Academy of Pediatrics meeting in Richmond. Dr. Coghill advised child specialists and psychiatrists to begin a home defense program by helping parents to realize need for calmness.

An army of frightened children is being produced here in America, he said, as a result of listening for hours to the radio war news broadcasts plus the hysteria of parents. These children, he reported, show more evidences of anxiety states than English refugee children who have gone through bombings.

Dr. Coghill, who is director of the Children's Memorial Clinic and assistant professor of pediatrics and neuropsychiatry at the Medical College of Virginia, pointed out that mental hazards of war are greatly increased for children in our time. The home may be a theater of the conflict and whole families suffer.

An attempt is being made now, he said, to appraise the effect of the first World War on children's minds and personalities. Cases of mental upsets and personality influences traced to that era have been studied in the past 17 years by the clinic of which he is director.

Science News Letter, May 3, 1941

ZOOLOGY

Incredible Animals Described in New Book

DO YOU believe in the sea-serpent, the unicorn, the basilisk? Of course not. They are all weird superstitions of an earlier and more credulous age.

But do you believe in the okapi, the lungfish, the duckbilled platypus? Be you never so skeptical, you've got to: they actually exist; specimens can be seen in museums and even alive in zoological parks and aquariums.

How narrow the line that separates creatures incredible and unreal from others that are incredible but real is brought out strongly in a new book, "The Lungfish and the Unicorn," by Willy Ley. (*Reviewed, SNL, this issue.*) It tells in some detail the story of the discovery of some of them, like the okapi and the lungfish; also of the "badak tanggiling," a fairly well-attested species of one-horned rhinoceros which has been shot and photographed on the island of Sumatra but of which no living specimen has ever been captured. This rhinoceros may be "discovered" any day—or it may never be seen again.

Nor must it be imagined that skepticism over such things as basilisks, kings of all serpents, whose very breath was poison, is of recent origin. Away back in the sixteenth century, when belief in them was rife, the Swiss naturalist Konrad Gesner thundered against them as "women's gossip and false nonsense," and he detected and denounced the fake monsters known as "Jenny Hanivers," made out of dried skates or rays and exhibited to crowds of the credulous.

Science News Letter, May 3, 1941

ICHTHYOLOGY

Fly Larvae Good Remedy For Anemia in Trout

TROUT can develop anemia if they do not get the right things to eat, and one of the best treatments for this anemia is to give the fish the larvae of ordinary houseflies, it is announced in the new issue of *Science* by A. M. Phillips and Clive M. McCay of the New York State Conservation Department, located at Cornell University. (*Science,* April 11.)

Previous research had shown that trout anemia can be effectively treated with fresh liver. Further experiments along this line demonstrated that the liver extracts now used in treating human anemias were as effective as the liver itself. However, the fly larvae proved to be even better remedy than the liver-extract capsules.

Science News Letter, May 3, 1941

ENGINEERING

Novel Steam Locomotive Invented in Germany

A NOVEL type of steam locomotive, with two small cylinders in a V-type mounting to turn each drive wheel instead of the two single big cylinders on each side coupled to all the drive wheels with a connecting rod, has just been granted U. S. patent 2,237,728. Thus, an engine with four drive wheels would have eight cylinders on a side, two above each wheel. In effect, each pair of wheels connected by its axle constitutes a separate, four-cylinder engine.

The inventor is a German, Ulrich Barske, of Kassel-Harleshausen, who has assigned his patent rights to the firm of Henschel und Sohn, of Kassel.

Science News Letter, May 3, 1941

IN SCIENC

MEDICINE

New Anti-Rabies Vaccine Protects with Small Doses

DOGS can be protected against rabies by means of a new type of vaccine, given in doses smaller than those necessary with anti-rabies vaccines hitherto in use. The new vaccine, in which cultured rabies virus is treated with formalin, was developed at the Hebrew University in Jerusalem by Dr. I. J. Kligler and Dr. H. Bernkopf. (*Science,* April 18.)

Science News Letter, May 3, 1941

ARCHAEOLOGY

Spanish Chain Mail Unearthed in Kansas

UNEARTHING badly-rusted Spanish chain mail in Kansas, Dr. Waldo R. Wedel of the Smithsonian Institution is very warm on the trail of long-lost supposedly rich Gran Quivera, where Coronado's treasure-hunting army made its farthest march for gold.

The object identified as chain mail is a mass of badly rusted inter-locked iron rings. Dr. Wedel made the discovery while excavating a council circle of Indians in central Kansas, near the great bend of the Arkansas River.

Examining the fireplaces, post holes, and trash containing distinctive pottery, stone and bone tools, charred corn and fruit pits, as well as Indian objects which the Indians must have got by trade from long distances, Dr. Wedel also discovered a very few glass and iron fragments which mean that white men or their goods were new to these Indians. Dr. Wedel concludes that he has investigated a site inhabited in the sixteenth or early seventeenth century, in the early period of Spanish exploration.

Archaeologists generally believe, he says, that inhabitants of Gran Quivera, who so disappointed the Spanish dream of finding natives of vast wealth, were Wichita Indians. Several large village sites are near the excavated council circle.

"Further studies," says Dr. Wedel, "may strengthen the growing suspicion that they are of Wichita origin and possibly represent some of the Quivera villages seen by Coronado."

Science News Letter, May 3, 1941

NCE FIELDS

NUTRITION

Manganese Necessary for Vitamin C in Tomatoes

MANGANESE, chemical necessary for tough steel and tender mother-love, has now been shown to be needed for the proper proportion of ascorbic acid (vitamin C) in your pre-breakfast tomato juice. Dr. Jackson B. Hester, agricultural chemist for the Campbell Soup Company, tells of the discovery that tomatoes raised on soils low in manganese are low in this necessary food element while tomatoes from high-manganese soils have plenty of the vitamin. (*Science*, April 25)

In a pot culture experiment, Dr. Hester found that addition of one part of manganese sulfate to 15,000 parts of one type of soil almost doubled the vitamin C content of tomatoes grown in it. The task now is to find out how much manganese is safe to apply to any given tomato field, for although a certain minimum of the element has been proven necessary, an excess of it is already known to be poisonous to plants.

Science News Letter, May 3, 1941

ARCHAEOLOGY

Who Lived in Ur of the Chaldees Before Flood?

SWAPPING one mystery for another, archaeologists, who unearthed evidence that a mighty Flood did wash over Bible country at Ur of the Chaldees, as ancient reports said, are now trying to identify the pre-Flood inhabitants of Ur.

Clues indicating that pre-Flood and post-Flood inhabitants of Ur in the 4000-3000 B.C. era were different were described by Dr. Leon Legrain of the University Museum, University of Pennsylvania, who spoke at the Catholic Anthropological Conference at Villanova, Pa. Dr. Legrain was one of the excavators of famous Ur.

Burials of pre-Flood people at Ur have revealed skeletons resting on their backs with hands crossed in front, while post-Flood people differently buried their dead in a contracted pose, Dr. Legrain said.

Babylonian tradition insisted that all civilization was brought to the earliest people of their land by a mysterious being from the sea, who taught them to write and gave them their religion and art, Dr. Legrain stated. This clue links with the fact that no sign of writing on clay has been found at Ur in pre-Flood layers, but after the Flood, Sumerian writing, and religion as well, were well established at Ur and extended later far northward through Mesopotamia.

Whether Ur, which over a thousand years later became the home town of Abraham about 2000 B.C., had Sumerians for its early people before and after the Flood, or whether Sumerians invaded after the Flood a land that had been held by other races, Japhetite, Semitic, or Subaerean, is a question Dr. Legrain posed as still waiting for scholars to answer.

Science News Letter, May 3, 1941

ARCHAEOLOGY

Capt. Smith's Town Studied By Government Scientist

AMERICA'S venerated site of Jamestown, Va., heretofore belonging to historians to explain, has been taken over by archaeologists, and the result is a unique piece of scientific research. Jamestown celebrates the 334th anniversary of arrival of English settlers, May 13.

Where once only the ruined brick church tower stood to show Americans a glimpse of the first permanent English settlement in the United States, now remains of about 18 major buildings have been brought to light by excavation, J. C. Harrington, National Park Service archaeologist, reports.

Quantities of clay pipes, glass bottles, kitchen and dining ware and other actual objects used by men, women, and children in old Jamestown—including doubtless some handled by Capt. John Smith, himself—are accumulating from the careful digging. These show what archaeologists call the "degree of cultural attainment of the period."

Mr. Harrington is even sorting out in sequence types of articles that generations of Virginia colonists used, as the colony grew from a wooden fort in 1607 to the impressive principal town and capital of the colony. Exactly as the typical handwork of prehistoric people is used as a clue to their antiquity, so things buried in Jamestown under plowed ground can be compared with similar objects from other colonial sites. It is hoped that this will enable archaeologists to date other, less well-known settlements occupied since 1607.

Science News Letter, May 3, 1941

AERONAUTICS

Mesh "Spider Web" Reveals Propeller Faults

See Front Cover

A WIRE mesh "spider web" mounted in back of warplane propellers as they are tested reveals faults in balance which would affect their efficiency as they pull their ships through the air at speeds of 400 miles per hour or more.

Of the several kinds of unbalance, one of the most elusive is the aerodynamic type. If the propeller blades have slight variations in pitch, each one pulls the air through at a different speed.

The wire mesh disk, shown on the front cover of this week's SCIENCE NEWS LETTER as set up in the Hamilton Standard propeller plant, reveals these defects. If all blades are the same, air pressure is steady, and the disk remains motionless. Unbalance causes it to flutter, to an extent measured by electrical recording instruments.

Science News Letter, May 3, 1941

ANTHROPOLOGY

Warns of Demoralization Which Follows Aggression

CIVILIZED nations which fall prey to Axis powers can expect the same fate that empire-builders meted to primitive natives of the jungle, is the warning sounded before the American Anthropological Association.

Emphasizing the danger to democracies of floundering amid confused thinking on issues and aims, Dr. Melville J. Herskovits of Northwestern University urged that anthropologists help clarify the inner values of our culture.

"A striking resemblance is to be discerned," he stated, "between the manner in which imperial governments set up their protectorates in Africa, the South Seas, and elsewhere and the methods employed in furthering the spread of totalitarian domination in Europe."

The aggressive proselytizing of a foreign power in such cases leads the attacked people to question their long cherished ideals and way of living, he added. And this is a prelude to cultural demoralization.

Dr. Herskovits' advice to Americans in the present world situation is to "reaffirm the values by which we live," for our own guidance, but without insisting that they necessarily rule other folk in the world.

Science News Letter, May 3, 1941

TAKING FORM

With the placing of the first upper horizontal piece of steel, the giant magnet for the University of California's new 100,000,000 volt cyclotron or "atom-smasher" begins to take form. When complete, there will be 1000 tons of steel in the upper member, and 3,700 tons in the entire magnet. So big are these parts that it is necessary to erect them in the open. Later a building will be constructed around them. The location is a hill in Berkeley, overlooking San Francisco Bay.

PHYSICS

200,000,000 Volt Energies Seen With New Cyclotron

Powerful New Instrument for Synthetic Radium-Like Materials Now Being Constructed in California

By WATSON DAVIS

ON THE top of a California hill opposite San Francisco there is building a giant machine that will manufacture synthetic radium-like substances that promise to usher in a new era of cancer treatment and industrial applications.

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The man behind that super-atom smasher is a tall, fair-haired physicist, not yet 40, who in a decade has brought about one of the outstanding developments in understanding how the universe is put together. He is Ernest Orlando Lawrence, Nobelist and University of California professor.

The other day he said that his $1,500,000 atom machine, or cyclotron, will manufacture in one brief minute the equivalent of 350 grams, more than 10 ounces, of radium. This is more than all the radium in the world. Radium to do the same job would cost at least $10,000,000 if it could be produced. It is true that the radiosodium, artificially radioactive element manufactured in the cyclotron by atomic bombardment, lasts only about 14 hours. But it can be produced daily or hourly as needed.

Only a little over ten years ago I talked with Lawrence in Berkeley when he was a young man with an untried idea. He showed me then a model of his cyclotron, a glass apparatus that looked like a frying pan. As I heard him tell of the immense construction that will give forth energies of at least 100,000,000 volts, as much as the cosmic rays from the heavens themselves, I remembered those early days.

Cautiously Dr. Lawrence now hints that the giant cyclotron may even produce double the energy that it has been announced to deliver when it goes into service two or three years hence. It may actually be a 200,000,000 volt machine. There was high excitement only a few years ago when a million volt lightning generator was developed to imitate nature's electrical discharges smashing down upon electrical transmission lines. The largest cyclotron in operation, under the guidance of its inventor, Dr. Lawrence, generated deuterons (centers of heavy hydrogen atoms) at 16,000,000 volts.

Dr. Lawrence is the latest American to receive the Nobel prize awarded to him in 1939 after the war began. With the Scandinavion countries in the grasp of the Nazi, he may remain the most recent American Nobelist for years to come.

It is possible that the cyclotron in these days of military defense preparations may have more than mere scientific importance. It is known that there is an intensive drive on in scientific circles to explore the possibilities of power, practical useful power, from within the atom. This is secret research and how close science is to a real result can not now be told.

Dr. Lawrence hinted at what the new giant among the world's 30-odd cyclotrons may be able to do. He hopes that it may find new things that can not even be found in the cosmic rays. Just as a whole new world came to view when the power of man's machines was increased from hundreds of thousands of volts to millions of volts, so when hundreds of millions of volts are available new secrets may be unravelled.

Remember that dynamic Dr. Lawrence is not yet 40. He and dozens of other scientists in his laboratory and elsewhere are pioneering as eagerly in new fields as any '49er who crossed the plains.

A century ago Joseph Henry and other great scientists of those days spoke from rostrums of science. Today in a new age, there are scientific revolutionaries among us, remaking our world as Henry and his contemporaries changed the face of the earth on which they lived.

MILITARY SCIENCE

Young Women Wanted As Civilian Airplane "Plotters"

For First Time, Girls Will Be Enrolled in America For Defense Duty Similar to That at Battle Front

FOR America's new air raid defense plan, thousands of alert and adaptable young women will be particularly needed to "man" information centers, as soon as Uncle Sam starts enrolling eager volunteers now clamoring to help their country.

Alertness and youth are prime assets for tense, emergency-type work in these centers, said Major Gordon P. Saville, of the Air Defense Command, at Mitchel Field, in an interview.

American women will be counted on to do much of this important and skilful work, he explained, because the Army believes that they can, and because more of them have time to give. As a peacetime preparedness measure, America's new air raid mobilization of half a million civilians is on a strictly non-pay, volunteer basis.

When the Army gives the go signal for enrolling, it will mean that for the first time in America's military history young women by the thousand will be wanted for defense duty very similar to headquarters work at a battle front. Whole countries are the "front" now, but this is especially vital work close-linked with war operations.

This line of work has no counterpart in civil life.

It is so new that it is an American preparedness invention, in process now of being evolved. Some ideas have been borrowed from British air raid defense, some from Germany. An experimental program for America has been tested in New England, but it was experimental, and on a comparatively small scale. For a land so broad as the United States, a new pattern of air defense must be created, and put in smooth working order —in case.

Major Saville emphasized the fact that two distinct groups of civilian volunteers will be enrolled for America's air defense. Dotted all over the country must be watchers and listeners by the thousands; they are the observation corps volunteers, who will be of varied ages and types. Then, in information centers, the warnings must be handled just as messages are dispatched to a brain for interpretation and action. It is in these information centers that young men and women, several hundred to each center, will be particularly needed.

Plotters and tellers, the workers in these centers are called. We shall be using these words casually, it seems. Plotters listen, receive to ear, and the instant a signal comes, they quickly translate the sound warning message to visual signs, and plot them on a board. Tellers then relay the messages from the board, sending out the vital information that enabels interceptor commands to rush fighting planes to a scene of air attack.

For this work quick coordination of muscle and eye, hand and brain, is essential. That is why the Army counts on young America's help—but not too young, Major Saville adds quickly. Volunteers for this duty must be adults and with a developed sense of dependability.

If a young volunteer has manual skill of some sort, or a gift for such skill, that will be an asset. But the Army figures on training volunteers in the special duty to which they are assigned, such as operating telephone, teletype, radio, or technical radio equipment.

Air raid information centers will dot the country, say in several hundred important cities. For thorough-going preparedness, observation posts will have to be counted by thousands, with some half million volunteers trained to the twentieth century Paul Revere job of warning America.

Qualifications for obervers are not very specific, at present at least. Probably many types of Americans could stand guard on farm walls and city roofs. In some remote areas, there may be only a handful of people, and from these one or two may volunteer. Probably a volunteer in such circumstances would do, whoever it was.

That blind persons can render valuable aid by detecting the sound of planes at a greater distance then seeing persons can hear a plane, has been suggested. The Army is receptive to such ideas. Whether blind persons with keen hearing can be organized for such work, however, is one of the numerous possibilities and problems that remain to be worked out. Observers, after all, must be used wherever they live.

Science News Letter, May 3, 1941

BIOLOGY

Chemicals Do Not Affect "Heredity" of Viruses

SINCE the virus that causes mosaic disease of tobacco has been prepared in crystalline form, making a better knowledge of its chemical makeup possible, it has become feasible to attach other chemical compounds to various points on the surface of its enormous molecules, Dr. W. M. Stanley of the Princeton laboratories of the Rockefeller Institute for Medical Research reported to the American Philosophical Society.

Such attachment of formaldehyde and other chemicals causes a loss of virus activity on the part of the molecules treated, Dr. Stanley stated. The chemically treated molecules, however, are still able to reproduce themselves, and their offspring-molecules show no changes in their basic reactions.

Science News Letter, May 3, 1941

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PERMANENT WAVE MODEL

This is a skeleton of a hair seen through atomic spectacles. Subjecting this model to tension will stretch it 100 per cent. In a hair this stretching is assisted by heat and steam and then the hair can be waved or set. Creasing of trousers is on the same principle. "Side chains" of the chemical model are not shown in this picture, but they would attach to the snap fasteners.

PHYSICS

Models With Snap Fasteners Show How Hair Is Waved

WITH atom models 100,000,000 times natural size, held together with snap fasteners, science has been able to find what happens in such diverse processes as the waving of a woman's hair, the pressing of her husband's trousers, and the action of the muscle fibers in the bodies of either.

In his Franklin Medal lecture before the American Philosophical Society, Dr. Hugh S. Taylor, who is David B. Jones Professor of Chemistry at Princeton University, described his studies with these new models. He credited his student, Bernard Becker, with working out many details.

By studying the effects of various substances on beams of electrons or X-rays, it is possible to deduce the arrangements of the atoms to form their molecules. The individual atoms are so small, however, that even the new super-power electron microscope would have to be 20 times more potent to observe them individually.

Knowing the arrangement of the atoms, models may be made, of special little wooden blocks. Formerly, said Dr. Taylor, these were held together with pegs, but he has made them so that they are joined with snap fasteners, like those used in clothing. These have the advantage that long chains may be subjected to various kinds of handling without having them fall apart, as they did with the pegs.

He finds that the silk protein, fibroin, consists of long chains of links called peptides. Each consists of atoms of carbon, hydrogen, nitrogen and oxygen. The silk fibroin chain is fully stretched, but with hair and wool protein, or keratin, there are at least three forms. In one the links are folded, but when it is stretched, it resembles the silk.

"The stretched form, or beta-keratin, is not, however, the normal form of hair keratin," Dr. Taylor stated. "Normal or alpha-keratin must be a folded structure. It is these folds which are drawn out when the fiber is stretched and the stretched condition may be 'set' by exposure to steam heat while the tension is maintained. It is this process of 'stretching' and 'setting' which has attained the dimensions of a fine art, common to both sexes, in the 'permanent wave' and 'set' and in the 'trousers crease'. As is also well-known to both sexes, this imposed change is only temporary, the hair or wool reverting gradually to its normal folded alpha-keratin structure."

He also has found that muscle fiber, or myosin, has "the extension and contraction characteristic of hair fiber." The contraction and return to normal state, he declared, are chemically induced.

Perhaps these studies may aid in a better understanding of cancer. Models were made of substances that cause cancer. They found that there appeared to be some correlation between their power to produce the effect and the extent to which the atoms were all in one plane or not. The structure of vitamins, hormones, sulfanilamide and other new drugs is being studied. From these, perhaps, it will be possible to find out how they work in the body.

Science News Letter, May 3, 1941

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PSYCHOLOGY

Seizures Do Not Permanently Damage Nervous System

Psychologists Find That Rats Recover Soon From Epileptic-Like Attacks Caused By Noise

WHEN rats are thrown into epileptic-like seizures by noise, there is no permanent impairment of the nervous system, Dr. Harold Schlosberg and Dr. Frank W. Finger, of Brown University, told the Eastern Psychological Association meeting in Brooklyn, N. Y.

These sound-produced seizures in rats are believed by some psychologists to have a parallel in humans in the way bursting bombs and shrieking shells or sirens make some individuals jump and jittery.

Rats were exposed by these investigators to a whistle of extremely high pitch —almost the limit of audibility. Six different animals went into a total of 20 seizures during the course of the experiment.

After a seizure, the rats were unusually quiet, although there was no special drop in their activity after hearing the whistle if they did not have a seizure.

But the loss of activity was no greater than might be attributed to the fatigue naturally resulting from such violent activity as occurs in these frenzied attacks.

This fact and their failure to find any indication that repeated attacks produce a cumulative effect led Dr. Schlosberg and Dr. Finger to the conclusion that the sound causes no permanent damage to the nervous system.

The sound-induced fits are different, these scientists believe, from the "neuroses" that have been previously observed in other mammals.

Science News Letter, May 3, 1941

Not the Same as Epilepsy

THE fits brought on in rats by the noise of a high-pitched whistle or air blast are not exactly the same as the "grand mal" epileptic fits in humans, it is indicated from a report by Drs. M. T. Long, R. T. Walsh and G. L. Kreezer, of Cornell University.

Many of the symptoms of the noise-induced fits in rats are so much like those of epilepsy that some scientists have thought they might be equivalent.

In humans, however, it has been found that in the coma that follows grand mal attacks of epilepsy, the brain waves of the patient—those electric impulses originating in the brain itself—are greatly reduced in amplitude.

In the similar quiet stage following the rat's seizure, there is no such change in the electric activity of the brain, these scientists found.

Science News Letter, May 3, 1941

PSYCHOLOGY

Present World War Due to Diseased Ways of Thinking

Spartan Childhood Training and Recent Hardships Have Made Germans Victims of Irrational Processes

THE WORLD WAR and the "ghastly picture which the international scene exhibits" are due to irrational and diseased mental processes, especially in Germany, Dr. Edward C. Tolman, professor of psychology at the University of California, told the American Philosophical Society in the R.A.F. Penrose, Jr., Memorial Lecture.

The recent fad of working off anger by smashing a plaster figure with a satisfying noise is an example of the same sort of irrational thinking displayed by the Germans, who feel that they can overcome the barriers to their own well-being by smashing other nations, Dr. Tolman indicated.

This irrational process is known to psychologists as "displaced aggression." Because of the fact that it is irrational, such a diseased way of thinking cannot readily be overcome by logical argument or education.

Another such irrational and diseased mental process is termed "group identification." It is what makes the German feel that successes of the German Army and the Nazis are actually equivalent to his own individual happiness and success.

These irrational mechanisms have their start when, often in early childhood, the individual cannot get things essential for his own well being. He then substitutes, illogically, the successes of his family, school, economic class, nation, or even "hemisphere," and the leaders of these groups, as though they were identical with his own success.

Germany's relatively Spartan system of childhood training, as well as the hardships suffered recently by the German people, is blamed by Dr. Tolman for the widespread development there of diseased thinking.

"The only cure for Germany," he said, "would be a less rigid and Spartan system of training and a less mystical belief in German 'Blut und Boden.'"

In Italy, due to type of family and school discipline, youthful frustrations are probably not so great as in Germany and come more from the actual poverty of the country.

In America, the essence of our democracy has been, in the past, the ever-repeated breaking down of tendencies toward such irrational identification with the state and its rulers. Our free family life, schools, and democratic political procedures have insured that the welfare of the group or its leaders should not be regarded as more important than the welfare of the individual.

"But today," Dr. Tolman warned, "all is threatened. We Americans, like the denizens of the Old World, are beginning to talk primarily about group survival, group success, group enemies."

We need to ask ourselves, he said, how far this is logical and how far we, like the Germans and Italians are indulging in irrational, diseased group identification—how far the depression and recession, the horrors of unemployment and all the consequent suffering and frustrations have led us into displacing our aggressions against enemies abroad rather than against our true barriers at home.

In any case, he said, if the thinking is irrational and diseased, it grips us and we cannot give it up. If it is rational, we don't want to.

He sees only two ways out.

We must work for some larger, more powerful, more international group to emerge from this war in which our children and our children's children can more safely and happily "identify."

And we must see to it that the sacrifices demanded of individuals here are not so unreasonable as those demanded in Germany, remembering that only the well-being of individuals can build a good and worthy society.

"A surviving America," he said, "with the same soil erosion, pellagra, discrimination against racial minorities, and unemployment will not have been greatly worth the throwing away of our steel, our oil and our sons."

Science News Letter, May 3, 1941

● RADIO

Dr. Gordon W. Allport, of Harvard University, will discuss "Morale, American Style," as guest scientist on "Adventures in Science," with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, May 8, 3:45 p.m. EDST, 2:45 EST, 1:45 CST, 12:45 MST, 11:45 a.m. PST. Listen in on your local station. Listen in each Thursday.

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PUBLIC HEALTH

Find Parrot Fever Invasion of Barnyards and Pigeon Roosts

Strong Suspicion That Many Patients Sick During Recent Years with "Virus Pneumonia" Had Psittacosis

PARROT fever, or psittacosis, dangerous ailment of parrots and parrakeets and their human owners or handlers, has invaded the barnyards and pigeon roosts of the nation. Discovery of the virus of the disease in both pigeons and chickens was reported by Dr. Karl F. Meyer, director of the Hooper Foundation, University of California Medical School, and consultant to the California State Department of Health, at the meeting of the American Epidemiological Society in New York.

The discovery, made in California, New Jersey and Chicago, means that the job of protecting humans from this very contagious and often fatal ailment is much tougher than disease fighters suspected when they thought they had only to protect bird lovers and breeders from getting the disease from pet birds. This involved inspection of all aviaries and of birds as they were shipped to pet stores for sale. Inspection of all chicken farms and all the flocks owned by pigeon fanciers would be a herculean task.

The discovery of the disease among chickens and pigeons is so recent that plans for controlling it and preventing its spread have not yet been considered. Since making this discovery, however, Dr. Meyer strongly suspects that many patients sick during the last several years with attacks of what was diagnosed as "virus pneumonia" or "pneumonitis" probably had parrot fever.

The disease is so highly infectious that not only chicken breeders but poultry dealers, market men and housewives who plucked chickens to prepare them for the family dinner might have acquired psittacosis if the fowl had been infected. Symptoms of the disease in humans are somewhat like those of pneumonia, similar enough to be diagnosed "atypical pneumonia," which is the label doctors have used in recent years for a pneumonia-like disease not caused by the pneumococci or by any other germ they could identify. Physicians would not be looking for the psittacosis virus unless the patients had a history of being near parrots or other psittacine birds, and so would not make tests that would show its presence.

Years of study of this disease led Dr. Meyer to make such tests on blood and lung specimen sent him for diagnosis by a doctor in Pasadena, Calif., who had a patient sick with an unfamiliar malady. The tests showed the psittacosis virus, but the patient and his relatives declared there were no parrots or parrakeets on their premises. They admitted having pigeons, however, so Dr. Meyer promptly inspected these birds, even though no one had ever before reported psittacosis in pigeons. He found 60% of this flock of 32 pigeons infected. Already in 1939, he found the infection in 7 of 19 doves examined in Chicago. These birds had infected a student and a caretaker. Discovery of parrot fever in chickens was made in New Jersey, where the virus was found in one of three chickens examined. Here again the owner had contracted an "atypical pneumonia" which was recognized as psittacosis.

The discovery of parrot fever in chickens and pigeons and the probability, therefore, that the disease is fairly prevalent in humans, though travelling under an alias, led to tests of various strains of viruses isolated from human patients sick with influenza and pneumonia. Some of this work was done in Dr. Meyer's laboratory and some in the Berkeley, Calif., laboratories of Dr. Monroe Eaton, of the Rockefeller Foundation. At least one virus from human pneumonitis patients, the MP virus isolated by Drs. Thomas Francis and T. P. Magill, of New York City, was found by these tests to be indistinguishable from that of psittacosis. According to Dr. Henry Pinkerton, a virus morphologically identical with psittacosis has been isolated from pigeons on a thiamin-deficient diet. The birds came originally from South Carolina.

Science News Letter, May 3, 1941

MEDICINE

Kidney Extract for Blood Pressure Encouraging

"DISTINCTLY encouraging results" in treating many animals and 17 high blood pressure patients with a kidney extract that lowers blood pressure were reported by Dr. Irvine H. Page, of Indianapolis to the American College of Physicians in Boston.

General use of the material is apparently still in the future, as Dr. Page stated that the problem of production of the extract in sufficient quantity has not yet been solved.

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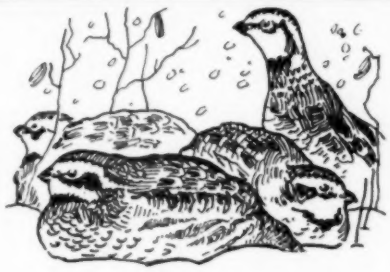
WILDLIFE

NATURE RAMBLINGS
by Frank Thone



Shelterbelt Dividends

SHELTERBELTS in the West are beginning to afford protection against winter blizzards and summer suns and hot winds to more than the human populations who have planted and tended them. All manner of wild birds and beasts are making their homes in the trees and shrubs reports Paul H. Roberts of the U. S. Forest Service.

Most numerous of the new inhabitants, probably, are game birds, both natives like bobwhite quail, grouse and prairie chicken and imported species like pheasants and Old World partridges, not to mention innumerable songbirds.

Mammalian shelterbelt dwellers include opossums and raccoons, and of course a certain number of fur-bearing predators, especially foxes and skunks. Deer are showing up occasionally, in shelterbelts not too far from natural timber where deer have survived.

Rabbits swarm among the trees. While new plantings are young, the saplings have to be protected against them, lest they chew off all the lower bark and kill them. However, once the trees are well established, the rabbits become assets rather than liabilities. They are worth about 25 cents apiece, for meat and fur; and at least one Plains community has provided its hospital with an "iron lung" from the proceeds of rabbit drives through the neighboring shelterbelts.

It is in winter, of course, that these planted groves are most heavily populated, because they offer not only protection against the merciless smothering drift carried by the blizzards, but also edible berries and seeds on the bushes planted as outside rows to break the windsweep under the lower branches.

"Many belts, in winter, look just like poultry yards," says Mr. Roberts.

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NUTRITION

Poor Teeth of Draftees Due To Bad Diets as Infants

Lack of Vitamin C, Orange Juice Vitamin, in Food 20 Years Ago, Accounts for Many Rejections Now

LACK of vitamin C in infant diets 20 or so years ago is the reason why nearly three times as many men are being rejected for America's 1940-1941 draft army on account of bad teeth as were rejected for the same cause in 1917, Dr. C. G. King, of the University of Pittsburgh, charged at the meeting of the Federation of American Societies for Experimental Biology in Chicago.

Vitamin C, also called ascorbic acid, is the citrus fruit, cabbage and tomato juice vitamin which protects against scurvy. It has many other functions in the body, Dr. King pointed out. Among other things this vitamin aids tooth and bone development, wound healing, growth, development of red blood cells, sugar tolerance, nerve function and the detoxification of both organic and inorganic materials.

About five to 10 times more vitamin C is needed for tooth development than for growth and protection against scurvy, Dr. King said. The present generation of young people "have used more tooth brushes and tooth pastes than were ever used before, but many of them clearly did not have a diet that was adequate for normal tooth development," he declared.

Many of them, he pointed out, did not get mother's milk in infancy but were raised on evaporated and pasteurized milk.

"Both evaporated and pasteurized milks are obviously good foods, and they are distinctly safer than raw milk, but as produced 20 years ago, they were relatively deficient in ascorbic acid (vitamin C) and they tend to remain so today.

"Even raw cow's milk does not provide a normal intake of vitamin C, because it is naturally only about one-fourth as rich in ascorbic acid as mother's milk."

Dr. King believes infants today are still not getting enough vitamin C to insure strong teeth. He believes they should have added to their milk from the very first, about 30 to 50 milligrams of ascorbic acid per day. As they get older, it is relatively simple to provide enough of this vitamin from common foodstuffs, but Dr. King believes it is a "tragic mistake" not to provide this vitamin to tiny babies in order to protect their tooth development.

"The cost of providing an adequate allowance of ascorbic acid in milk formulas would not be significant for most families in comparison with the good accomplished," he said.

"At current prices it would be in the range of 50 to 90 cents per month, and there is a good prospect that the cost could be markedly decreased in future years. At current wholesale prices, the cost would now be only 5 to 10 cents per month."

Science News Letter, May 3, 1941

To protect their feet from sharp ice in spring, sled dogs around Hudson Bay region wear *moccasins*.

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•First Glances at New Books

AERONAUTICS—ENGINEERING

AIRPLANE METAL WORK, Vol. 2, Airplane Sheet Metal Shop Practice—Alex M. Robson—*Van Nostrand,* 109 p., illus., $1.25. Books such as this should be immensely valuable in training the thousands of new workers in the aircraft industry. This, for example, contains very practical and specific directions as to what to do in the operations of the sheet metal shop.

Science News Letter, May 3, 1941

RADIO

YOUR CAREER IN RADIO—Norman V. Carlisle and Conrad C. Rice—*Dutton,* 189 p., illus., $2. Student advisers concerned with vocational guidance will often refer to this book boys and girls who are thinking of radio as a career, for its various phases are described in an interesting manner.

Science News Letter, May 3, 1941

TECHNOLOGY

TRAFFIC MANAGEMENT (Rev. ed.)—G. Lloyd Wilson — *Appleton-Century,* 453 p., $3.50. This now standard text has been brought up to date with particular attention to changes in the law and in freight claims.

Science News Letter, May 3, 1941

ENGINEERING—ECONOMICS

A. S. T. M. CONVERSION TABLES FOR KINEMATIC AND SAYBOLT UNIVERSAL VISCOSITIES, 10 p., 25c; A. S. T. M. VISCOSITY INDEX TABLES, 31 p., 50c.—*American Society for Testing Materials.*

Science News Letter, May 3, 1941

ASTRONOMY

ASTRONOMICAL PAPERS PREPARED FOR THE USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC—U. S. Nautical Almanac Office, Naval Observatory—*Govt. Print. Off.,* 130 p., 30c (Vol. X, Pt. II, Catalog of 3539 Zodiacal Stars for the Equinox 1950.0).

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ZOOLOGY

THE LUNGFISH AND THE UNICORN, An Excursion into Romantic Zoology—Willy Ley—*Modern Age Books,* 305 p., $2.75. See p. 280.

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PHOTOGRAPHY

THE ART OF RETOUCHING AND IMPROVING NEGATIVES AND PRINTS (14th ed.)—Robert Johnson; Arthur Hammond, rev.—*Amer. Photographic Pub. Co.,* 158 p., $2.50. These tested directions should be used only when the photographer has done his best to get a perfect photograph without such time-consuming aids.

Science News Letter, May 3, 1941

ENTOMOLOGY

INSECTS AND THEIR STORIES — Harry Hoogstraal—*Crowell,* 144 p., illus., $2. Very readable popular accounts of a number of insects, ranging all the way from housefly to cecropia moth, with many full-page illustrations reproduced by offset from excellent photographs. An excellent book to read as the season approaches in which you are going to become acquainted with many insects — whether you desire it or not.

Science News Letter, May 3, 1941

SOCIOLOGY

SOCIAL WORK YEAR BOOK, 1941—Russell H. Kurtz, ed.—*Russell Sage Foundation,* 793 p., $3.25. Part I of this encyclopedic reference volume contains 83 signed articles prepared by authorities on various aspects of social work. The second section is a directory of national and state agencies.

Science News Letter, May 3, 1941

SCIENCE

SCIENCE INTERESTS AND ACTIVITIES OF ADOLESCENTS—Herbert S. Zim—*Ethical Culture Schools, New York,* 256 p., $2.50. The report of a study begun in 1934 as part of a research program of the Commission on Secondary School Curriculum of the Progressive Education Association. The research was based on many thousands of contacts with adolescent students.

Science News Letter, May 3, 1941

PSYCHIATRY

PSYCHIATRIC SOCIAL WORK — Lois Meredith French—*Commonwealth Fund,* 344 p., $2.25. The report of a study sponsored by the American Association of Psychiatric Social Workers. It tells where and how such work is being conducted.

Science News Letter, May 3, 1941

PROPAGANDA

FIFTH COLUMN IN AMERICA—Harold Lavine—*Doubleday, Doran,* 240 p., $2.50. The editorial director of the Institute for Propaganda Analysis describes what he believes to be anti-democratic movements in this country and the personalities behind them. The author feels that the "fifth-columnists" of greatest danger to America are not alien spies, but insidious anti-democratic influences growing on our own soil.

Science News Letter, May 3, 1941

ECONOMICS

UNEMPLOYMENT AND THE UNEMPLOYED —H. W. Singer—*Chemical Pub. Co.,* 152 p., $2.75. This is a book written about the England before the war. Unemployment may not be the most immediate problem in England or in America at this moment, but so far as thinking men can foresee the problems of the future after the war, unemployment will again have to be faced and wrestled with. It is a problem that is only temporarily eclipsed by war and is intimately bound up with the present troubles and future fate of the whole world.

Science News Letter, May 3, 1941

ECONOMICS

FOUNDATIONS OF AMERICAN POPULATION POLICY—Frank Lorimer, Ellen Winston and Louis K. Kiser—*Harper,* 178 p., $2.50. The Committee on Population Studies and Social Planning of the National Economic and Social Planning Association outline a logical framework for a national population policy for the United States. Both quantity and quality of population are given consideration and constructive measures are suggested.

Science News Letter, May 3, 1941

ECONOMICS

STUDIES IN WAR ECONOMICS — *International Labour Office,* 199 p., $1. Since the war began, the work of the International Labour Office has been devoted largely to the economic and social problems of wartime. This volume contains studies written by members of the office staff in the course of their work on problems which are the chief concern of workers, employers and governments, published without delay to be useful.

Science News Letter, May 3, 1941

GEOGRAPHY—ECONOMICS

THE EUROPEAN POSSESSIONS IN THE CARIBBEAN AREA—Raye R. Platt, John K. Wright, John C. Weaver and Johnson E. Fairchild—*Amer. Geographical Soc.,* 112 p., map., $1. Expertly written reference material on much-discussed Caribbean lands. Scope of the publication is best described in the sub-title: "A Compilation of Facts Concerning Their Population, Physical Geography, Resources, Industries, Trade, Government, and Strategic Importance."

Science News Letter, May 3, 1941

BIOLOGY

BIOLOGY WORKBOOK—B. B. Vance, C. A. Barker, D. F. Miller; W. R. Teeters, ed.—*Lippincott,* 316 p., 92c.

Science News Letter, May 3, 1941